

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/888,530 (*Q65159*)



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REMARKS

Claims 1-4 and 6-24 are all the claims pending in the application. By this Amendment,

Applicants cancel claim 5, and rewrite claim 6 in independent form.

I. Claim Objections:

The Examiner objects to claims 2 and 3 because they recite the terms "circularly" and "linearly", which do not correctly described the noun "polarizer". Applicants amend claims 2 and 3, as suggested by the Examiner, by deleting the objectionable terms in favor --circular-- and --linear--.

II. Claim Rejections Under 35 U.S.C. § 112(2nd):

The Examiner rejects claims 7 and 19 under 35 U.S.C. § 112(2nd) because the recited "ridgelines" lack structural relationship relative to the prismatic structures. To address the Examiner's concerns, Applicants amend claims 7 and 19 to recite ridgelines as --defining edges of said optical path changing faces--.

Applicants respectfully assert that the amended claims more particularly point out and distinctly claim the subject matter regarded as the invention, thereby overcoming the raised rejections under §112(2nd).

III. Allowable Subject Matter:

At numbered paragraph 13 of the Office Action, the Examiner indicates that claim 6 would be allowed if it were rewritten in independent form. To capture this allowable subject

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/888,530 (*Q65159*)

matter, Applicants rewrite claim 6 as suggested by the Examiner. The Examiner should allow claim 6 in the next Patent Office paper.

The Examiner allows claims 13-18 and 20-24. Notwithstanding, Applicants have editorially amended some of these allowed claims. For example, claim 13 is amended by rewriting the term “its upper surface” as --an upper surface of said plate-like member--, and the term “formed in its surface” as --formed in a surface thereof--. Applicants respectfully assert that the amendments improve the clarity of the claims.

The Examiner also indicates that claim 19 would be allowable if it were rewritten to overcome the rejection under § 112(2nd). Applicants respectfully assert that the amendments to claim 19 overcome the § 112(2nd) rejections. And since claim 19 depends from allowed claim 13, the Examiner should allow claim 19 in the next Patent Office paper.

IV. Claim Rejections On Prior Art Grounds:

The Examiner rejects claims 1-5, 7-9, 11, and 12 under 35 U.S.C. § 102(e) as being anticipated by US 6,340,999 B1 to Masuda et al. (“Masuda”); and claim 10 under 35 U.S.C. § 103(a) as being obvious over Masuda. Applicants respectfully traverse these rejections in view of the following remarks.

Claim 1 is amended to include the subject matter of claim 5 (which is canceled). According to amended claim 1, and with reference to Fig. 3 (which depicts an exemplary embodiment of the invention), the optical path changing face A1 is inclined at an angle $\theta 1$ in a range of *35 to 48 degrees* with respect to a reference plane of the lower surface of the plate-like

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/888,530 (*Q65159*)

member 1. At least this feature, in combination with the other limitations recited in claim 1, is not taught or suggested by the prior art relied upon in the grounds of rejection.

The grounds of rejection cite column 13 (lines 48-54) of Masuda as allegedly teaching the range of *35 to 48 degrees* required by claim 1. However, and with reference to Fig. 2 of Masuda, this portion of the reference's disclosure merely relates to an angle between the direction of the stripe of the periodic concave and convex portions 3f and the horizontal direction of the pixel pattern of the display device 5. In Fig. 2, this angle is depicted as being 23 degrees. However, this 23 degree angle does not relate to an inclination angle of the reflection portion 3e relative to a reference plane of a lower surface of the light guide 3.

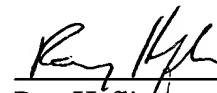
For these reasons, Applicants respectfully assert that claim 1 is patentable, and that claims 2-4 and 7-12 are patentable at least by virtue of their dependencies.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/888,530 (*Q65159*)

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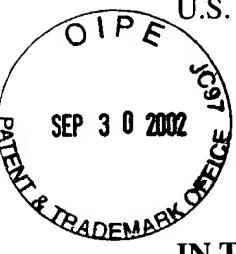
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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claim 5 is canceled.

The claims are amended as follows:

1. (Amended) A light pipe comprising:

a plate-like member including light output means formed in itsan upper surface of said plate-like member so that light incident on an incidence side surface of said plate-like member is exited from said lower surface of said plate-like member through said light output means; an adhesive layer having a refractive index lower than that of said plate-like member; and an anti-reflection layer made of a circularlycircular polarizer and bonded to a lower surface of said plate-like member through said adhesive layer,

wherein said light output means formed in said upper surface of said plate-like member is constituted by a plurality of prismatic structures each shaped like a triangle in section and each having an optical path changing face inclined at an inclination angle in a range of from 35 to 48 degrees with respect to a reference plane of said lower surface of said plate-like member.

2. (Amended) A light pipe according to claim 1, wherein said anti-reflection layer made of a circularlycircular polarizer includes a quarter-wave plate, and a linearlylinear polarizer.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/888,530 (*Q65159*)

3. (Amended) A light pipe according to claim 2, wherein said anti-reflection layer made of a ~~circularly~~ circular polarizer ~~further includes a quarter wave plate, a half-wave plate and a linearly polarizer.~~

4. (Amended) A light pipe according to claim 3, wherein a maximum intensity of light exited from said lower surface of said plate-like member in terms of a plane perpendicular to reference planes of both said lower surface and said incidence side surface of said plate-like member is inclined at an angle of not larger than 30 degrees with respect to a normal to said reference plane of said lower surface of said plate-like member.

6. (Amended) A light pipe ~~according to claim 1~~ comprising:
a plate-like member including light output means formed in an upper surface of said plate-like member so that light incident on an incidence side surface of said plate-like member is exited from a lower surface of said plate-like member through said light output means;
an adhesive layer having a refractive index lower than that of said plate-like member; and
an anti-reflection layer made of a circular polarizer and bonded to a lower surface of said plate-like member through said adhesive layer;
, wherein said light output means formed in said upper surface of said plate-like member is formed by a repetitive structure of prismatic structures each having an optical path changing face and a long side face and arranged at intervals of a pitch of from 50 μm to 1.5 mm; each of said optical path changing faces is formed of a slope inclined downward from said incidence side

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/888,530 (*Q65159*)

surface to a counter end surface opposite thereto at an inclination angle in a range of from 35 to 48 degrees with respect to said reference plane of said lower surface of said plate-like member; each of said long side faces is made of a slope inclined at an angle in a range of from 0 to 10 degrees with respect to said reference plane; a difference between inclination angles of any two long side faces is not larger than 5 degrees over a surface of said plate-like member; a difference between said inclination angles of adjacent ones of said long side faces is not larger than 1 degree; and a projected area of said long side faces on said reference plane is not smaller than 5 times as large as that of said optical path changing faces on said reference plane.

7. (Amended) A light pipe according to claim 5, wherein ridgelines ~~of~~ said prismatic structures constituting said light output means defining edges of said optical path changing faces are inclined within a range of ± 30 degrees with respect to said reference plane of said incidence side surface.

13. (Amended) A light pipe comprising:
a plate-like member including light output means formed in its an upper surface of said plate-like member so that light incident on an incidence side surface of said plate-like member is exited from a lower surface of said plate-like member through said light output means; an adhesive layer having a refractive index lower than that of said plate-like member; and a light-diffusing layer including fine prismatic structures formed in its a surface thereof and bonded to said lower surface of said plate-like member through said adhesive layer.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/888,530 (*Q65159*)

17. (Amended) A light pipe according to claim 13, wherein said light output means formed in thesaid upper surface of said plate-like member is constituted by a plurality of sectionally triangular prismatic structures having optical path changing faces each inclined at an inclination angle in a range of from 35 to 48 degrees with respect to said reference plane of said lower surface.

18. (Amended) A light pipe according to claim 13, wherein said light output means formed in thesaid upper surface of said plate-like member is formed by a repetitive structure of prismatic structures arranged at intervals of a pitch of from 50 μm to 1.5 mm and each having an optical path changing face and a long side face; each of said optical path changing faces is constituted by a slope inclined downward from thesaid incidence side surface side to a counter end side at an inclination angle in a range of from 35 to 48 degrees with respect to said reference plane of said lower surface so that a projected width of each of said slopes on said reference plane is not larger than 40 μm ; and each of said long side faces is constituted by a slope inclined at an inclination angle in a range of from 0 to 10 degrees with respect to said reference plane so that an angle difference between any two long side faces over a surface of said plate-like member is not larger than 5 degrees, so that a difference between inclination angles of adjacent ones of said long side faces is not larger than 1 degree and so that a projected area of said long side faces on said reference plane is not smaller than 5 times as large as a projected area of said optical path changing faces on said reference plane.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/888,530 (*Q65159*)

19. (Amended) A light pipe according to claim 17, wherein ridgelines of said prismatic structures constituting said light output means defining edges of said optical path changing faces are in a range of ± 30 degrees with respect to said reference plane of said incidence side surface.